**Centralised ventilation unit WS 470 KR**

Comfort model

With preheating register and cross-counterflow heat exchanger.

Unit in right-hand version.

Brief description

Central, compact, very quiet domestic ventilation unit with heat recovery.

For controlled ventilation and air extraction.

Highly efficient ventilation unit achieves energy efficiency class A without optional accessories.

Especially suitable for modern new buildings and redevelopments.

Eligible for KfW funding and entry in the TZWL bulletin (NRW funding programme).

Installed on wall or upright (optional).

ISO Coarse 85 % (G4) filter in the exhaust air and ISO ePM1 80 % (F7) pollen filter in the outside air. A filter cascade (ISO Coarse 85 % / ISO ePM1 80 %) in the outside air is possible to increase the filter service life.

All units are equipped with state-of-the-art cross-counterflow heat exchangers or enthalpy heat exchangers with hygiene certificates according to VDI 6022, sheet 1.

Complete separation of exhaust air/supply air ducts throughout the unit. This prevents unwanted recirculation of air. Viruses (e.g. Corona virus) and bacteria are therefore not transmitted.

RLS 1 WR room air control included in the scope of delivery.

All domestic ventilation units can be controlled via the APP (air@home) and the browser-based web tool (www.air-home.de) using an integrated LAN interface.

USB connection as a standard feature for commissioning, control update and service.

All units are equipped with highly energy-efficient fans with EC technology.

The integrated/automatic volumetric flow constancy control ensures permanent compliance with the set volumetric flow under all operating conditions (e.g. filter contamination, air valve settings). This also results in easier commissioning/air volume measurement at the valves.

Combi sensor (humidity/temperature) integrated as a standard feature in the exhaust air enables demand-driven ventilation operation as well as an intelligent frost protection and dehumidification strategy (excess humidity protection).

All units are characterized by a frost protection strategy adapted to the real demand.

In addition, all units have a multifunction contact for the control of, e.g., a brine earth heat exchanger (unregulated pump), operation and fault display, preheating or supplementary heat register, shutters or cooling.

Two input contacts (12 V and 230 V) are available for, e.g., safety shutdown.

Various inputs/outputs enable a control connection to other building service installations, e.g., the heat pump.

Integrated MODBUS interface (TCP/IP and RTU) enables integration in the building control system.

The optional K-SM plug-in module enables integration into KNX building control systems.

The optional E-SM plug-in module enables integration into EnOcean systems.

Optional additional circuit boards ZP 1 and ZP 2 for expansion functions such as “pressure consistency control” of the EC fans, zone damper, brine earth heat exchanger (regulated pump), filter differential pressure measurement.

Maximum unit flexibility thanks to a wide range of equipment/connection options.

Modern unit module technology allows easy retrofitting (e.g. pre-heating, bypass) as well as high user-friendliness for service and maintenance.

Features

Housing

Powder-coated sheet steel housing.

Colour: Traffic white RAL 9016.

Simple filter change is possible without tools.

Tight, thermal bridge-free internal housing made of temperature-resistant, sound-absorbing and heat-insulating EPP material (average wall thickness 47 mm).

EPP housing with very good hygienic / non-hygroscopic properties.

Material checked by the Institute for Air Hygiene in accordance with VDI 6022.

Condensate tank integrated in EPP housing.

Unit surface and unit’s internal housing are easy to clean.

Sound-absorbing inner cladding in supply air channel.

Condensate drain via screen valve 1 ½“.

Optional DN 40 unit siphon (see accessories).

Filter:

ISO Coarse 85 % (G4) filter in the exhaust air and ISO ePM1 80 % (F7) pollen filter in the outside air.

Optional filter cascade (ISO Coarse 85 % / ISO ePM1 80 %) in the outside air possible to increase the filter service life.

Filter exchange without tools.

Operation

Ready for service with on/off switch.

RLS 1 WR control panel included in the scope of delivery, 4 air levels, filter change indicator, fault display.

Other control units can be connected in parallel.

Mobile operation via APP (air@home) or browser-based web tool (www.air-home.de) via smartphone, laptop or PC enables, e.g.,

live reporting, user management

Demand-driven automatic operation / time-controlled automatic operation

Manual operation / OFF

ECO mode supply air or ECO mode exhaust air

Filter queries, error messages

Optional RLS T2 WS touchscreen control unit for the setting of:

2 automatic operating modes (Auto Sensor / Auto Time)

4 manual operating modes (ECO exhaust air / ECO supply air / MANUAL / OFF)

Complete commissioning of the heat recovery units possible

Optional RLS G1 WS design control panel:

ON/OFF

5 levels

Automatic operation

ECO supply air, ECO exhaust air

Filter change and fault display

USB connection for service/commissioning – free MAICO commissioning software.

Network integration via integrated LAN interface.

Smart-Home ready (e.g. Loxone via Modbus TCP/IP).

Modbus TCP/IP and RTU integrated as a standard feature.

Optional KNX plug-in module K-SM for integration into building control technology, www.knx.org.

Optional EnOcean plug-in module E-SM for integrating the unit into the “EnOcean world”, www.enocean-alliance.org.

Control

Standard demand-driven volumetric flow regulation (“decisive humidity value”).

Continuously variable demand-driven adaptation of air volumes.

Integrated excess humidity protection function.

3 temperature sensors in outside, outgoing and supply air.

1 combi sensor (temperature and humidity) in exhaust air socket.

Up to four external sensors of different types (CO2, VOC, humidity) can be connected.

Multifunction contact for the control of e.g. brine earth heat exchanger (unregulated pump), operation and fault indicator, preheating or supplementary heat register, shutters or cooling.

Inputs for safety shutdown via 12V contact or 230V contact (e.g. smoke detector, fire alarm, differential pressureless fireplace).

Additional pushbutton input for triggering time-limited intensive ventilation (intermittent ventilation).

Expandable via optional additional circuit board ZP 1 for the control of:

3-way shutter (e.g. earth-air heat exchanger)

a regulated pump (e.g. brine earth heat exchanger)

of an air shutter of a zone control

Switching contact use for external supplementary heat register

Expandable via optional circuit board ZP 2 for:

Pressure consistency of the EC fans

Differential pressure controlled filter monitoring

Various inputs and outputs enable a control connection of the ventilation unit with another service installation, such as a heat pump.

Approvals and certificates

DiBt approval.

PHI certificate.

Test report in accordance with DIN EN 13141-7.

Certificate according to Swiss “energie-cluster.ch”.

Hygiene certificates for housing material (EPP) and heat exchanger.

Entry in TZWL/TZWL bulletin.

Heat exchanger/heat recovery

Highly efficient cross-counterflow heat exchanger made of plastic (PS).

Heat recovery up to 96 % and humidity recovery up to 60 %.

Hygiene certificate (no bacteria, virus growth / virus transfer) according to VDI 6022, sheet 1.

Heat exchanger can be cleaned with water, antimicrobial.

Units with enthalpy heat exchangers do not require a condensation connection.

Bypass

Included in the “B” unit variants.

Modulating, automatic 100% bypass for passive summer night cooling with adjustable minimum supply air temperature limit.

Frost protection

Prevention of the heat exchanger freezing at low temperatures.

Highly energy-efficient frost protection function for “K” unit models via demand-controlled, power-modulated, electric PTC preheating register.

For “non-K” unit models via supply air fan switch-off.

Recommendation: For “non-K” unit models, combine the heat recovery with a brine heat exchanger.

Fans

Forward curved centrifugal fans in the supply air or outgoing air.

Energy-efficient EC direct current motors with integrated volumetric flow consistency control.

Possibility of pressure consistency control via the optional additional circuit board ZP 2.

4 ventilation levels from 80 m³/h to 470 m³/h, can be adjusted continuously.

Installation information

Easy, very time-saving installation with the wall bracket included in the scope of delivery.

Housing cover is easy to remove using practical magnetic locks.

Provide sound absorbers on the supply air and exhaust air sides.

Comments: All unit variants (e.g. "K") can be converted into other unit variants (e.g. "KRET") later on using optional components.

Technical data

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| Article: | WS 470 KR |
| Air flow volume: | 80 m³/h - 470 m³/h |
| SEC average: | -39,5 kWh/(m²\*a) |
| Energy efficiency class: | A |
| Type of voltage: | Alternating current |
| Rated voltage: | 230 V |
| Frequency: | 50 Hz/60 Hz |
| Power consumption in accordance with DIN EN 13141-7 (A7): | 87 W |
| Stand-by power consumption: | < 1 W |
| Imax: | 11,5 A |
| Degree of protection: | IP 40 |
| DIBT approval: | yes |
| PHI certification: | yes |
| SPI value: | 0,28 Wh/m³ |
| Installation site: | floor / wall |
| System type: | Centralised |
| Housing material: | Galvanised sheet steel, powder coated |
| Heat exchanger material: | Synthetic material |
| Inner coating material: | Plastic EPP |
| Colour: | Traffic white (RAL 9016) |
| Weight: | 67 kg |
| Weight including packaging: | 79 kg |
| Filter class: | ISO Coarse 85 % (G4) / ISO ePM1 80 % (F7) |
| Connection diameter: | 160 mm |
| Connection diameter of condensation drain: | 1 1/2" (screen valve) |
| Width: | 841 mm |
| Height: | 857 mm |
| Depth: | 598 mm |
| Width with packaging: | 900 mm |
| Height with packaging: | 1.120 mm |
| Depth with packaging: | 650 mm |
| Airstream temperature at IMax: | -20 °C up to 40 °C |
| Max. degree of heat provision in accordance with DIN EN 13141-7 (A7): | 96 % |
| Heat exchanger construction type: | Cross-counterflow |
| Power of preheating register: | 1,8 kW |
| Position – exhaust air: | right |
| Bypass: | No |
| Frost protection: | integrated |
| Enthalpy heat exchanger: | No |
| Antifreeze circuit: | yes |
| Summer circuit: | ECO exhaust air / ECO supply air |
| Filter monitoring: | with time control |
| Humidity control: | integrated |
| CO2regulation: | SKD |
| Air quality control (optional): | EAQ 10/3 |
| KNX connection (optional): | K-SM |
| MODBUS interface: | integrated |
| Control unit included in scope of delivery.: | RLS 1 WR, App |
| Control unit (optional): | RLS T2 WS, RLS G1 WS |
| EnOcean wireless integration (optional): | E-SM |
| Mobile control: | yes |
| Housing emission sound pressure level: | 42 dB(A) Spacing 1m, sound absorption 10 m² |
| Packing unit: | 1 piece |
| Range: | K |
| GTIN (EAN): | 4012799952701 |
| Article number: | 0095.0270 |

Manufacturer: MAICO

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